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GROSS AND NET REPRODUCTION RATES, CANADA AND PROVINCES
1920 - 1942.

Since the introduction of a Dominion-wide system of Vital Statistics in 1926, the crude birth rate per thousand population has declined from an average of 24.1 in the five-year period 1926-30 to an average of 20.4 in the five-year period 1936-40. The lowest point reached was a rate of 19.8 in 1937. The crude birth rate rose during the war years and was 23.4 in 1942. The crude birth rate, however, is not a good measure of the rate at which the population is replacing itself because it is so much affected by changes in the age and sex composition of the population. The present report presents two more reliable indices of reproductive capacity, gross and net reproduction rates⁽¹⁾, which are unaffected by differences in the age and sex composition of the population.

The gross reproduction rate for a given year is the average number of girl children that would be born to each woman who lived to reach the age of 50 years, if the fertility rates of the given year continued unchanged. When the gross reproduction rate falls below unity, women in the reproductive period of life are not having enough children to replace themselves even if all their children lived to maturity. The gross reproduction rate of British Columbia was exactly unity in 1939, but, as far as we know, no province of Canada has as yet fallen below this level.

The net reproduction rate is a measure of reproductive capacity which takes into account the fact that all children born do not live to the end of the reproductive period. It gives the average number of girls that would be produced by a group of newly-born girls if the fertility and mortality rates of the period observed were to continue unchanged throughout their lifetime. It is thus a precise measure of the rate at which that part of the population which is capable of reproduction is replacing itself. A net reproduction rate of exactly unity would mean an ultimately stationary population. A rate above unity means that the population will continue to increase as long as the rate remains at this level, while a rate below unity means an eventually declining population.

(1) - A description of the method of calculating gross and net reproduction rates is given in Census Monograph No. 3, "Fertility of the Population of Canada", Ottawa, 1941. See Pages 82 and 84 of the separate Monograph or Pages 284 and 286 of Volume XII of the Census of 1931, in which the Monograph is republished.

Gross and net reproduction rates hitherto published for Canada and the Provinces have been based on births as registered. However, as in some other countries, deficiencies in birth registration have been found to exist. Sample surveys in 1931 and 1941 led to estimates of the amount of under-registration of births of 6% and 3% respectively. Since these estimates are only approximate, it has been the policy of the Bureau of Statistics to use a minimum estimate for under-registration in the calculation of Life Tables and reproduction rates. The estimates adopted for Canada as a whole were 5% in 1930-32 and 2% in 1940-42. The same estimate of 5% was used for years earlier than 1930. The amount of under-registration between 1932 and 1940 was obtained by interpolation between the figures for these years. In 1941 there was sufficient evidence to indicate a rather lower proportion of under-registration of births in Quebec than elsewhere in Canada. Hence the deficiency in births in this province was assumed to be 1%. While there are other differences between provinces in respect of the completeness of birth-registration, they are not known with sufficient accuracy to permit of numerical estimates. All rates presented in this report have been corrected for under-registration of births. Reproduction rates for Quebec in 1920 and 1921 were based on births given in the provincial "Annuaire Statistique" and rates were calculated by the indirect method.

Table 1 shows gross and net reproduction rates for Canada and the Provinces for 1930-32 and 1940-42, that is, for the three-year periods normally used in relating the vital occurrences to the populations shown by the census.

Table 1 - Gross and Net Reproduction Rates (corrected for under-registration of births); Canada^x and Provinces,
Three-year averages, 1930-32, 1940-42.

	1930-32		1940-42	
	Gross Repro- duction Rate	Net Repro- duction Rate	Gross Repro- duction Rate	Net Repro- duction Rate
Canada	1.631	1.390	1.416	1.274
Prince Edward Island.	1.752	1.473	1.664	1.455
Nova Scotia	1.713	1.445	1.570	1.378
New Brunswick	2.029	1.707	1.833	1.604
Quebec	2.023	1.622	1.664	1.445
Ontario	1.355	1.194	1.210	1.124
Manitoba	1.442	1.274	1.279	1.168
Saskatchewan	1.784	1.576	1.411	1.287
Alberta	1.734	1.535	1.448	1.323
British Columbia . . .	1.124	.994	1.161	1.073

x Excluding Yukon and the Northwest Territories.

Table 2 shows gross reproduction rates for Canada and the Provinces for selected two-year periods from 1920 to 1939. The rates for 1928-29 and 1938-39 are based on the estimated age and sex distributions of the respective provinces in those years.

Table 2 - Gross Reproduction Rates (corrected for under-registration of births), Canada^x and Provinces,
Two-year averages, 1921-1939.

	1921-22	1928-29	1931-32	1938-39
Canada.	2.003	1.683	1.604	1.336
Prince Edward Island.	1.971	1.634	1.792	1.659
Nova Scotia	1.799	1.607	1.716	1.460
New Brunswick	2.205	1.933	2.029	1.816
Quebec.	2.686	2.121	2.006	1.586
Ontario	1.603	1.380	1.319	1.124
Manitoba.	2.032	1.524	1.426	1.197
Saskatchewan.	2.180	1.894	1.749	1.402
Alberta	1.979	1.806	1.676	1.399
British Columbia.	1.351	1.185	1.095	1.029

^x Excluding Yukon and the Northwest Territories.

Table 3 shows gross reproduction rates for Canada as a whole by single years from 1931 to 1942. Figures for years other than census years are based upon estimated age and sex distributions.

Table 3 - Gross Reproduction Rates (corrected for under-registration of births), Canada^x
Single Years, 1931-1942.

1931	1.633
1932	1.575
1933	1.461
1934	1.427
1935	1.393
1936	1.356
1937	1.323
1938	1.349
1939	1.324
1940	1.373
1941	1.405
1942	1.547

^x Excluding Yukon and the Northwest Territories.

During the period of nineteen years covered by Table 2, Canadian fertility fell by a third. The fall was particularly great, first, because the initial years saw numerous births resulting from marriages postponed during World War I. and second, because the closing years were affected by postponement of marriages during the post-war depression. From 1936 onwards increase in employment opportunities led to an increase in the marriage rate and eventually to an increase in the numbers of first and second births. During the war years, not only did marriages take place which had been postponed during the depression but also full employment and other effects of the war situation probably led to marriages of younger women taking place earlier than they otherwise would have done. The war-time rise in births continued through 1943. The rate of fall shown in the ten-year period of Table 1 is thus considerably less than that shown in Table 2, since the former terminates with three war years. During the ten years, 1931 to 1941, gross fertility fell by 13% and net fertility by 8%. The underlying trend would probably be represented by a figure lying between the rate of fall of Table 1, and that of Table 2.

While fertility has been declining in all the provinces of Canada during the last twenty years, the rate of fall has varied greatly from Province to Province. The decline has been greatest in Quebec and the Prairie Provinces, least in the three Maritime Provinces. It has been generally found that higher fertility rates have tended to fall faster than lower rates, so that differences between regions or social groups tend to become gradually less. As a consequence of differences in economic development and consequent internal migration movements, provincial rates have not followed this pattern very closely. Yet there has been some tendency to equalisation. In 1921-22 the highest provincial gross reproduction rate was nearly double the lowest rate. In 1940-42, the highest rate was 58% greater than the lowest rate.

Analysis of the cultural and economic aspects of recent fertility trends will appear in forthcoming publications of the Dominion Bureau of Statistics.



